DOCUMENT RESUME

ED 255 854 CG 018 186

AUTHOR Dielman, T. E.; And Others
TITLE Resisting Pressures to Smoke: A Longitudinal Study.
SPONS AGENCY National Inst. on Drug Abuse (DHHS/PHS), Rockville, Md.
PUB DATE Aug 84
GRANT DA02644
NOTE 23p.; Paper presented at the Annual Convention of the American Psychological Association (92nd, Toronto, Ontario, Canada, August 24-28, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Advertising; Children; Grade 5; Grade 6; Intermediate Grades; Longitudinal Studies; *Peer Influence; *Prevention; *Program Effectiveness; Sex Differences; *Smoking; *Socialization

ABSTRACT

Although recent survey findings have indicated a decrease in the percentage of teenage smokers, cigarette smoking remains the leading preventable cause of morbidity and mortality in the United States. A social learning smoking prevention intervention, consisting of four sessions which occurred at 2-week intervals, was conducted with fifth and sixth graders in two school systems. Schools were randomly assigned to intervention (N=476 students) or control (N=392 students) conditions. Students in the intervention groups learned about the physiological effects of cigarette smoking, the pressures which influence adolescents to smoke, ways to resist peer pressures, and the techniques of cigarette advertising. All students were pretested at the beginning of the first study year and posttested at the end of that school year and the beginning of the next school year. The results indicated a significant treatment x sex x occasion interaction with respect to experimentation with cigarettes; and a significant treatment x school system x occasion interaction with respect to recent cigarette smoking. The intervention was effective in reducing the prevalence of experimentation with cigarettes among boys but not among girls, in both school systems; and was effective in reducing the onset of more frequent smoking among both sexes in one school system, but not in the other. Social learning intervention may not be effective in schools where a certain threshold level of smoking has been reached. (NRB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED255854

RESISTING PRESSURES TO SMOKE:

A LONGITUDINAL STUDY

T. E. Dielman, S. L. Leech, A. T. Lorenger, and W. J. Horvath

The University of Michigan

CG018186

Presented at the 92nd Annual Meeting of The American Psychological Association, Toronto, Ontario, August, 1984.

Mailing Address: T. E. Dielman, Ph.D., Department of Postgraduate Medicine, G1210 Towsley, The University of Michigan, Ann Arbor, MI 48109

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

T. E. Dielman

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ABSTRACT

A social learning smoking prevention intervention was conducted in the fifth and sixth grades in two school systems. The intervention consisted of four sessions which occured at two week intervals. In each school system the schools were randomly assigned to intervention and control conditions. All students were pretested at the beginning of the first study year and post tested at the end of that school year and the beginning of the next school year. A total of 476 intervention group and 392 control group students were present at all testing occasions.

There was a significant treatment by sex by occasion interaction with respect to "experimentation with cigarettes" (having ever smoked a cigarette). A significantly smaller percentage of the intervention group boys than control group boys had experimented with cigarettes at both post test occasions, and the two curves diverged across occasions. A significantly smaller percentage of the intervention group girls than the control group girls had experimented with cigarettes at the first post test, but these two curves converged and crossed at the second post test occasion.

There was a significant treatment by school system by occasion interaction with respect to "recent cigarette smoking" (having smoked a cigarette in the past month). A significantly smaller percentage of the intervention group than the control group students in school system A were recent smokers at the time of the second post test. There was no significant difference between the intervention and control groups with respect to recent cigarette smoking at any occasion in school system B.

Resisting Pressures to Smoke: A Longitudinal Study *

T. E. Dielman, S. L. Leech, A. T. Lorenger, and W. J. Horvath
The University of Michigan

In spite of the findings in recent surveys which indicate a decrease in the percentage of teenage smokers (Green, 1979; Bachman, et al., 1981) that decline has not been of a sufficient magnitude to alter the basic conclusion in the 1979 Surgeon General's report that cigarette smoking is the leading preventable cause of morbidity and mortality in the United States (USDHEW, 1979).

The primary purpose of the project reported in this paper was to design, implement, and test the effectiveness of a social learning approach to a cigarette smoking prevention intervention. The program was implemented during the fifth and sixth grade years and endeavored to reduce the recruitment to cigarette smoking during the early junior high school years (grades seven and eight).

The design of the intervention program was based on the social learning paradigm employed by Evans, et al. (1978) and McAlister, et al. (1978). These pioneering efforts established a paradigm with a theoretical basis in Bandura's (1977) social learning theory and McGuire's (1969) inoculation theory of attitude change. The basis of the intervention is exposure of the students in the target group to the undesirable behavior and examples of types of pressure to indulge in that behavior (smoking) prior to the time that the majority of the students will be forced to make a real choice. The target group is then provided with a set of counterarguments and given practice in, and reinforcement for, using those arguments.

Two aspects of the design of the current study were intended to improve upon the design of earlier studies. First, individual students, rather than groups, were followed longitudinally. Second, the intervention was initiated in the fifth and sixth grades prior to

---

*This study was funded in part by Grant #DA02644 from the National Institute on Drug Abuse.

the students' entry into junior high school, when a significant increase in experimentation with cigarettes occurs (see, for example, Evans, et al., 1979; Dielman, et al., 1982). One argument against elementary school intervention is that the influence of the prevention program may deteriorate substantially by the time the students reach junior high school where they are at a greater risk of exposure to experimentation with cigarettes. One counterargument is that this is an empirical question which has not yet been tested and, if the influence of the program does not deteriorate from grade five or six to grade seven, then students may be deterred from experimenting with cigarettes who otherwise may not have been deterred if the program were not implemented until grade seven.

METHODS

A total of ten schools were selected from the first school system (referred to as School System A) for inclusion in the study, yielding 31 fifth and sixth grade classes. Sixteen classes were assigned to the experimental condition and fifteen classes to the control condition. Prior to assignment, the schools were matched as much as possible on the basis of student achievement test scores, family income, and racial mix. Rosters were obtained from the schools involved and informed consent forms were mailed to the parents of the students. The overall response rate was in excess of 70%, yielding 625 students who were eligible to participate in the pretesting in March, 1981. Thirty-three students were absent during the pretest sessions, resulting in 592 (305 experimentals and 287 controls) students who participated in the pretest. Four additional schools were recruited from the second school system (referred to as School System B). These schools provided twelve experimental classes and ten control classes. Pretesting was conducted in these schools during February, 1982. There were 44 students absent during the pretest, resulting in a total of 285 children in the experimental group and 226 in the control group at the time of pretesting in School System B.

Prior to the administration of the questionnaire, class lists were obtained and each student was assigned a unique identification number. At the time of questionnaire administration, each student received the questionnaire which had his or her identification number printed on it. At each test point throughout the study, each student received a questionnaire with this same distinct number on it. In this way, responses can be compared across time without requiring the submission of questionnaires identifying the students by name. The pre-intervention questionnaire was administered to each class as a group. Researchers served as proctors during administration of the questionnaire and answered any questions from students. Students with reading problems were taken to a separate classroom, where a proctor provided individual help with the questionnaire.

All School System A classes which were designated as "experimental" experienced a series of four smoking prevention intervention sessions during March and April, 1981. The School System B experimental classes received the intervention sessions during March and April of 1982. The series of four intervention sessions were conducted in the experimental classes at two-week intervals. The leader of these sessions was a certified teacher/counselor who was a member of the research staff. The research team developed and then implemented the program in each of the experimental classes. The regular classroom teachers remained in the classrooms as observers of the intervention process but did not assist in the intervention. One to three members of the research staff joined the intervention leader in each session, depending upon the requirements of the activities planned. The immediate physiological effects of cigarette smoking and the pressures which young people may encounter influencing them to smoke cigarettes were first presented. A film and discussion comprised the first session. Various forms of these pressures to smoke were discussed and the students were introduced to strategies for resisting pressures to smoke. The second and third sessions focused on resisting peer pressures. After a film and discussion, the students were given the opportunity to

practice refusal and counterpressure strategies through the use of participatory videotapes and role-playing techniques. The fourth session examined cigarette advertising techniques and encouraged students to develop ways to counter the effects of cigarette advertising. A slide presentation illustrating various cigarette advertisements was used. Included as part of the presentation was a discussion of the slides and the opportunity for students to change the wording or picture to ridicule the advertisement or change it into a prevention advertisement. For the purpose of review, a film showing reasons young people smoke or do not smoke was shown at the end of the last session. Table 1 summarizes the procedures in the four intervention sessions.

The first post test was conducted in the School System A classes in June, 1981. At this time, 295 fifth grade students (151 in the experimental group and 144 in the control group) and 286 sixth grade students (143 in each of the two groups) were tested. Post-test two was conducted in the School System A classes in October, 1981. This included 125 current seventh graders who had been experimental students, 127 current seventh graders who had been control students, 112 current sixth grade students who received the treatment, and 78 current sixth grade students who were controls. The School System B classes received the first post-test in June, 1982. Of the 488 School System B students who were tested, 136 were fifth grade experimental students, 137 were sixth grade experimentals, 104 were fifth grade controls, and 111 were sixth grade controls. The second post-test was conducted in School System B in September, 1982. Of the School System B students tested at this occasion, 118 were current sixth grade experimental students, 89 were current sixth grade controls, 121 were current seventh grade experimental students, and 98 were current seventh grade controls.

RESULTS

The pretest data which were obtained from fifth and sixth grade students were analyzed to determine whether there were any pre-existing differences between the experimental and control groups which should be controlled for statistically in the analysis of the post-intervention testing. The two groups did not differ with respect to the matching variables (achievement test scores, family income, and racial mix). As a further check on the matching procedures which were employed, each pair of experimental and control schools were compared with respect to the percentage of students who had ever smoked cigarettes, who had smoked cigarettes in the past month, and who expressed intentions to smoke cigarettes in the future. In School System A one of the five pairs of schools approached a statistically significant difference between experimental and control students in the percentage having ever smoked cigarettes at pretest (experimental group = 41 percent, control group=27 percent , $p = .07$). Across all schools in School System A at pretest, 32 percent of the experimental students and 33 percent of the control students had ever smoked cigarettes. In School System B, 44 percent of the experimental students and 52 percent of the control students had ever smoked cigarettes at pretest ($p = .09$). Summed across both school systems, 37 percent of the experimental students and 39 percent of the control students had ever smoked cigarettes at pretest ($p = .51$). In School System A four percent of the experimental students and two percent of the control students had smoked cigarettes during the past month ($p=.14$). Over all schools in both systems, six percent of the experimental students and five percent of the control students had smoked cigarettes during the past month ($p = .55$). There was no significant difference in the percentage of experimental and control students at pretest who reported an intent to smoke cigarettes in the future in either school system. Twelve percent of the experimental students and 10 percent of the control students reported such an intent.

The last post test to be considered in the analyses reported here, post test two, occurred at the beginning of the school year when the students entered either sixth or seventh grade, depending on their grade level upon entry into the study. The tables reflect the grade level upon entry into the study (grade five or grade six). The results of the repeated measures analysis of variance of the experimentation with cigarettes item, ("Have you ever tried to smoke a cigarette?") are presented in Table 2 for the two school systems combined. The associated percentages are provided in Table 3. At the second post test occasion the significant main effects with respect to experimentation with cigarettes were grade ($p < .001$), school system ($p < .001$) and occasion ($p < .001$). Reference to Table 3 shows that a greater percentage of students reported experimenting with cigarettes over time, a greater percentage of current seventh graders than current sixth graders reported doing so, and the percentage of students in School System B reporting such experimentation was greater than the percentage of students in School System A. The significant interaction effects were grade by sex ($p = .02$), sex by school system ($p < .001$), school system by occasion ($p < .001$), grade by school system by occasion ($p = .03$), treatment by occasion ($p = .05$), and treatment by sex by occasion ($p = .002$). The grade by sex interaction reflects the greater difference in reported experimentation with cigarettes between fifth and sixth grade girls than between fifth and sixth grade boys. The sex by school system interaction reflects the finding that a greater percentage of boys than girls reported experimenting with cigarettes in School System A, while the reverse was the case in School System B. The school system by occasion interaction reflects the greater rate of increase in reported experimentation with cigarettes from pretest to post test two among School System B students compared to School System A students (School System A: pretest=30 percent, post test one=36 percent, post test two=42 percent; School System B: pretest =47 percent, post test one =60 percent, post test two=69 percent). The critical interactions for purposes of testing the study hypotheses are the treatment by occasion and the treatment by sex by occasion

interactions, both of which were significant. The nature of these interactions can be seen in Figure 1. There was a significant divergence in the percentages of experimental and control boys reporting experimenting with cigarettes over the three occasions, with an increasingly greater percentage of control boys than experimental boys reporting experimentation with cigarettes (experimental boys: pretest=35 percent, post test one=44 percent, post test two=53 percent; control boys: pretest=36 percent, post test one=49 percent; post test two=59 percent). The percentages of experimental and control girls reporting experimentation with cigarettes, however, converged over time, with a greater percentage of experimental girls than control girls reporting such experimentation at the last post test. When the two sex groups are combined, the treatment by occasion interaction appears as a convergence of the percentages of experimental and control subjects reporting experimentation with cigarettes over the three occasions (experimental group: pretest=37 percent, post test one=45 percent, post test two=55 percent; control group: pretest=40 percent, post test one=50 percent, post test two=55 percent) indicating no treatment effect with regard to experimentation with cigarettes. It appears, then, that there is a diminishing treatment effect from post test one to post test two with regard to experimentation with cigarettes when both school systems and both sexes are combined. Considering the boys alone, however, there is a significant treatment effect over the second post test occasion. This effect is emphasized when the results of the reports of experimentation with cigarettes are analyzed for School System A alone. The repeated measures analysis of variance of reports of experimentation with cigarettes for School System A only revealed a significant ($p<.001$) treatment by sex by occasion interaction with the experimental and control boys' curves diverging over time and the experimental and control girls' curves converging and crossing (experimental boys: pretest=36 percent, post test one=38 percent, post test two=44 percent; control boys: pretest=31 percent, post test one=41 percent, post test two=50 percent; experimental girls: pretest=25 percent, post test one=30 percent, post test two=40 percent; control girls: pretest=27 percent, post test one=32 percent, post test two=33 percent).

The results of the repeated measures analysis of variance of reports of recent cigarette smoking ("Have you smoked a cigarette in the past month?") at post test two are shown for both school systems combined in Table 4. The associated percentage distributions are shown in Table 5. The significant main effects were grade ($p = .04$), school system ($p < .001$) and occasion ($p < .001$). These results reflect an increase over time in the percentage of current smokers and greater percentages of smokers in grade seven than grade six and in School System B than in School System A. The significant interaction effects were grade by school system ($p = .04$), grade by occasion ($p = .002$), and school system by occasion ($p < .001$). There were no significant interaction effects involving the treatment condition. The treatment by school system by occasion significance level was .15, however, and examining the treatment by occasion interaction in School System A alone reveals that combining the two schools served to mask a significant treatment by occasion interaction which was not revealed as a school system by treatment by occasion interaction at the traditional levels of significance. The results of the repeated measures analysis of variance of the reports of recent smoking in School Sysem A are shown in Table 6. As shown in Table 6, there were significant interaction effects of grade by treatment by sex ($p = .05$), grade by occasion ($p = .01$), and treatment by occasion ($p = .002$). The grade by occasion interaction reflects the decrease, in School System A, of those in the sixth grade at post test two reporting recent smoking over the three occasions (pretest=four percent, post test one=three percent, post test two=two percent), and an increase in the percentage in the seventh grade at that time reporting recent smoking over the three occasions (pretest=one percent, post test one=four percent, post test two=six percent). The grade by treatment by sex interaction reflects the finding, shown in Table 5, that over all occasions combined, grade six experimental boys reported more recent smoking than grade six control boys (four percent versus two percent) while the reverse was the case for grade seven boys (experimental group=three percent, control group=six percent). Among girls, the percentage of grade six controls reporting recent smoking was six times as great (six percent) as the grade six experimental

experimental group (one percent), while three percent of both the experimental and control groups reported recent smoking at the seventh grade level. The treatment by occasion effect, as shown graphically in Figure 2, reflects that the percentage of experimental group students in School System A reporting recent smoking declined from three percent at pretest to one percent at post test two, while the control group students reporting recent smoking increased from two percent at pretest to seven percent at post test two. As is evident in Table 5, the treatment by occasion interaction was of a similar form for both boys and girls in School System A. The conclusion to be drawn from the results through the second post test with respect to recent cigarette smoking is that the hypothesized treatment by occasion interaction was observed for both sexes, but only in School System A.

CONCLUSIONS

The social learning intervention for prevention of cigarette smoking was effective in reducing the prevalence of experimentation with cigarettes among boys, but not among girls, in two different school systems. It was effective in reducing the onset of more frequent smoking among both boys and girls in one school system studied, but not in the second school system. One possible explanation for the lack of generalizability is the higher baseline rate of smoking in the second school system. Prevention approaches such as the social learning intervention may not be effective in schools where a certain threshold level of smoking prevalence has been reached.

References

Bachman, J.G., Johnston, L.B., O'Malley, P.M. Smoking, drinking, and drug use among American high school students: Correlates and trends, 1975-1979. American Journal of Public Health, 1981, 71, 59-69.

Bandura, A. Social Learning Theory. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1977.

Dielman, T.E., Leech, S.L., Becker, M.H., Rosenstock, I.M., Horvath, W.J., and Radius, S.M. Parental and child health beliefs and behaviors. Health Education Quarterly, 1982, 9, 156-173.

Evans, R.I., Henderson, A.H., Hill, P.C., and Raines, B.E. Smoking in children and adolescents: Psychosocial determinants and prevention strategies. In Smoking and Health: A Report of the Surgeon General. Washington, D.C.: US Government Printing Office, DHEW Publication No. PHS 79-50066, 1979.

Evans, R.I., Rozelle, R.M., Mittlemark, M.B., Hansen, W.G., Bane, A.L., and Havis, J. Deterring the onset of smoking in children: Knowledge of immediate physiological effects and coping with peer pressure, media pressure, and parent modeling. Journal of Applied Social Psychology, 1978, 8, 126-135.

Green, D.E. Teenage Smoking: Immediate and Long Term Patterns. Washington, D.C.: DHEW, 1979.

McAllister, A.C., Perry, C. and Maccoby, N. Systematic peer leadership to discourage tobacco dependency. Presented at the 1978 American Psychological Association Convention. Toronto, 1978.

McGuire, W.J. The nature of attitudes and attitude change. In G. Lindzey and E. Aronson (Eds.), Handbook of Social Psychology. Volume 3: The Individual in a Social Context. Reading, Mass.: Addison-Wesley, 1969.

U.S. Department of Health, Education and Welfare Smoking and Health: A Report of the Surgeon General. Washington, D.C.: US Government Printing Office, DHEW Publication No. PHS 79-50066, 1979.

TABLE 1

Experimental Program in Smoking Prevention

Session 1: Introduction of the topic of smoking prevention by the teacher/facilitator: Health Hazards and Influences to Smoke.

Goal: To make students aware of the many known dangers of smoking cigarettes and of various pressures which influence people to start cigarette smoking.

Film: "Pressures to Smoke" by Richard I. Evans, Ph.D.

Teacher-led class discussion of film and related information, including health hazards and side effects of cigarette smoking and social pressures to smoke.

Session 2: Resisting Pressures to Smoke

Goal: To encourage students to make an independent decision about whether or not to smoke and to provide students with strategies to refuse the offer of a cigarette.

Film: "Resisting Pressures to Smoke" by Richard I. Evans, Ph.D.

Teacher-led class discussion of film, emphasizing various strategies to resist smoking a cigarette.

Worksheet: "Practice Saying No." Students develop responses to refuse the offer of a cigarette and share these with the class.

Role-play: Students use various strategies to refuse the offer of a cigarette from research staff.

Session 3: Resisting Peer Pressure to Smoke

Goal: To provide students with situations in which they can practice ways to resist peer pressure to smoke.

Videotapes: "Who's Chicken?" and "Homework" by Alfred L. McAlister, Ph.D., used as background information for subsequent role play.

Role-play: Small groups of students develop skits from worksheets describing situations with various peer pressures to smoke cigarettes. One research staff leader helps each group. These skits are presented to the class.

Table 1 (Continued)

Session 4: Resisting Cigarette Advertising Pressures

Goal: To develop students' awareness of media pressures to smoke and to develop the ability to analyze and resist such pressures.

Slide presentation of various cigarette ads to illustrate four advertising strategies and to teach a counter-strategy to resist cigarette advertising.

Class discussion of many of the slides.

Film: "Let's Talk About Smoking" by the American Heart Association, used as a review of the reasons young people give for smoking or not smoking.

TABLE 2
Results of Repeated Measures Analysis of Variance
"Have You Ever Tried to Smoke a Cigarette?"
Pretest - Post Test One - Post Test Two
Both School Systems Combined

Source of Variance	ss	df	ms	f	p
Between Subjects					
Grade	8.20	1	8.20	14.11	.00
Treatment	.01	1	.01	.02	.90
Sex	.30	1	.30	.52	.47
School System	27.07	1	27.07	46.62	.00
Grade x Treatment	.07	1	.07	.13	.72
Grade x Sex	3.12	1	3.12	5.37	.02
Grade x System	.09	1	.09	.16	.69
Treatment x Sex	.17	1	.17	.29	.59
Treatment x System	.38	1	.38	.65	.42
Sex x System	6.23	1	6.23	10.73	.001
Grade x Treatment x Sex	.01	1	.01	.02	.88
Grade x Treatment x System	.32	1	.32	.55	.46
Grade x Sex x System	.14	1	.14	.25	.62
Treatment x Sex x System	.01	1	.01	.03	.87
Grade x Treatment x Sex x System	.07	1	.07	.12	.73
Error	386.75	666	.58		
Within Subjects					
Time	9.36	2	4.68	99.43	.000
Grade x Time	.08	2	.04	.88	.42
Treatment x Time	.28	2	.14	2.92	.05
Sex x Time	.23	2	.11	2.39	.09
School System x Time	.88	2	.44	9.38	.000
Grade x Treatment x Time	.07	2	.04	.77	.46
Grade x Sex x Time	.27	2	.14	2.87	.06
Grade x System x Time	.35	2	.17	3.69	.03
Treatment x Sex x time	.60	2	.30	6.42	.002
Treatment x System x Time	.14	2	.07	1.46	.23
Sex x System x Time	.18	2	.09	1.92	.15
Grade x Treatment x Sex x Time	.03	2	.02	.34	.72
Grade x Treatment x System x Time	.05	2	.02	.50	.61
Grade x Sex x System x Time	.02	2	.01	.22	.80
Treatment x Sex x System x Time	.06	2	.03	.60	.55
Grade x Treatment x Sex x Sys x Time	.02	2	.01	.18	.84
Error	62.72	1332	.05		

TABLE 3
Pretest - Post Test One - Post Test Two Percentages
"Have You Ever Tried to Smoke a Cigarette?"
Percent "Yes"

School System A

		N	Pretest(%)	Post Test One(%)	Post Test Two(%)
Experimental Group					
Boys	Grade 5	44	32	34	41
	Grade 6	55	40	42	47
Girls	Grade 5	52	12	21	29
	Grade 6	48	38	40	52
Control Group					
Boys	Grade 5	37	30	38	51
	Grade 6	52	33	44	50
Girls	Grade 5	35	17	26	26
	Grade 6	57	37	39	40

School System B

Experimental Group					
Boys	Grade 5	38	34	45	61
	Grade 6	42	33	55	6
Girls	Grade 5	50	40	50	64
	Grade 6	54	63	72	85
Control Group					
Boys	Grade 5	30	43	47	67
	Grade 6	24	38	67	67
Girls	Grade 5	33	48	55	55
	Grade 6	31	74	87	87

TABLE 4
Results of Repeated Measures Analysis of Variance
"Have You Smoked a Cigarette in the Past Month?"
Pretest - Post Test One - Post Test Two
Both School Systems Combined

Source of Variance	ss	df	ms	f	p
Between Subjects					
Grade	.48	1	.48	4.17	.04
Treatment	.04	1	.04	.35	.55
Sex	.12	1	.12	1.01	.31
School System	6.34	1	6.34	55.18	.000
Grade x Treatment	.09	1	.09	.77	.38
Grade x Sex	.01	1	.01	.07	.79
Grade x System	.51	1	.51	4.46	.04
Treatment x Sex	.07	1	.07	.63	.43
Treatment x System	.02	1	.02	.17	.68
Sex x System	.36	1	.36	3.11	.08
Grade x Treatment x Sex	.17	1	.17	1.50	.22
Grade x Treatment x System	.20	1	.20	1.70	.19
Grade x Sex x System	.14	1	.14	1.25	.26
Treatment x Sex x System	.02	1	.02	.22	.64
Grade x Treatment x Sex x System	.03	1	.03	.28	.60
Error	80.29	699	.11		
Within Subjects					
Time	1.91	2	.95	19.81	.000
Grade x Time	.60	2	.30	6.21	.002
Treatment x Time	.08	2	.04	.88	.41
Sex x Time	.08	2	.04	.87	.42
School System x Time	1.62	2	.81	16.88	.000
Grade x Treatment x Time	.06	2	.03	.63	.54
Grade x Sex x Time	.04	2	.02	.39	.68
Grade x System x Time	.21	2	.10	2.15	.12
Treatment x Sex x Time	.15	2	.07	1.53	.22
Treatment x System x Time	.19	2	.09	1.93	.15
Sex x System x Time	.08	2	.04	.86	.43
Grade x Treatment x Sex x Time	.03	2	.02	.35	.71
Grade x Treatment x System x Time	.14	2	.07	1.45	.23
Grade x Sex x System x Time	.10	2	.05	1.05	.35
Treatment x Sex x System x Time	.06	2	.03	.64	.53
Grade x Treatmt x Sex x Sys x Time	.08	2	.04	.81	.44
Error	67.24	1398	.05		

TABLE 5
Pretest - Post Test One - Post Test Two Percentages
"Have You Smoked a Cigarette in the Past Month?"
Percent "Yes"

School System A

		N	Pretest(%)	Post Test One(%)	Post Test Two(6)
Experimental Group					
Boys	Grade 5	40	11	0	0
	Grade 6	59	3	5	2
Girls	Grade 5	51	0	2	0
	Grade 6	48	0	6	2
Control Group					
Boys	Grade 5	37	3	0	3
	Grade 6	54	2	6	11
Girls	Grade 5	34	3	9	6
	Grade 6	60	0	0	8

School System B

Experimental Group					
Boys	Grade 5	39	8	13	15
	Grade 6	48	6	8	23
Girls	Grade 5	51	8	10	14
	Grade 6	56	7	13	32
Control Group					
Boys	Grade 5	36	3	6	14
	Grade 6	29	10	10	31
Girls	Grade 5	35	9	11	17
	Grade 6	32	22	22	31

TABLE 6
Results of Repeated Measures Analysis of Variance
"Have You Smoked a Cigarette in the Past Month?"
Pretest - Post Test One - Post Test Two
School System A

Source of Variance	ss	df	ms	f	p
Between Subjects					
Grade	.03	1	.03	.67	.41
Treatment	.06	1	.06	1.45	.23
Sex	.04	1	.04	.95	.33
Grade x Treatment	.00	1	.00	.01	.91
Grade x Sex	.03	1	.03	.72	.40
Treatment x Sex	.01	1	.01	.34	.56
Grade x Treatment x Sex	.17	1	.17	4.04	.05
Error	16.02	381	.04		
Within Subjects					
Time	.05	2	.02	.87	.42
Grade x Time	.23	2	.12	4.42	.01
Treatment x Time	.34	2	.17	6.43	.002
Sex x Time	.13	2	.06	2.37	.09
Grade x Treatment x Time	.13	2	.06	2.44	.09
Grade x Sex x Time	.14	2	.07	2.61	.07
Treatment x Sex x Time	.06	2	.03	1.20	.30
Grade x Treatment x Sex x Time	.02	2	.01	.29	.75
Error	20.24	762	.03		

FIGURE 1

PERCENT HAVING EVER SMOKED CIGARETTES TREATMENT BY SEX BY OCCASION

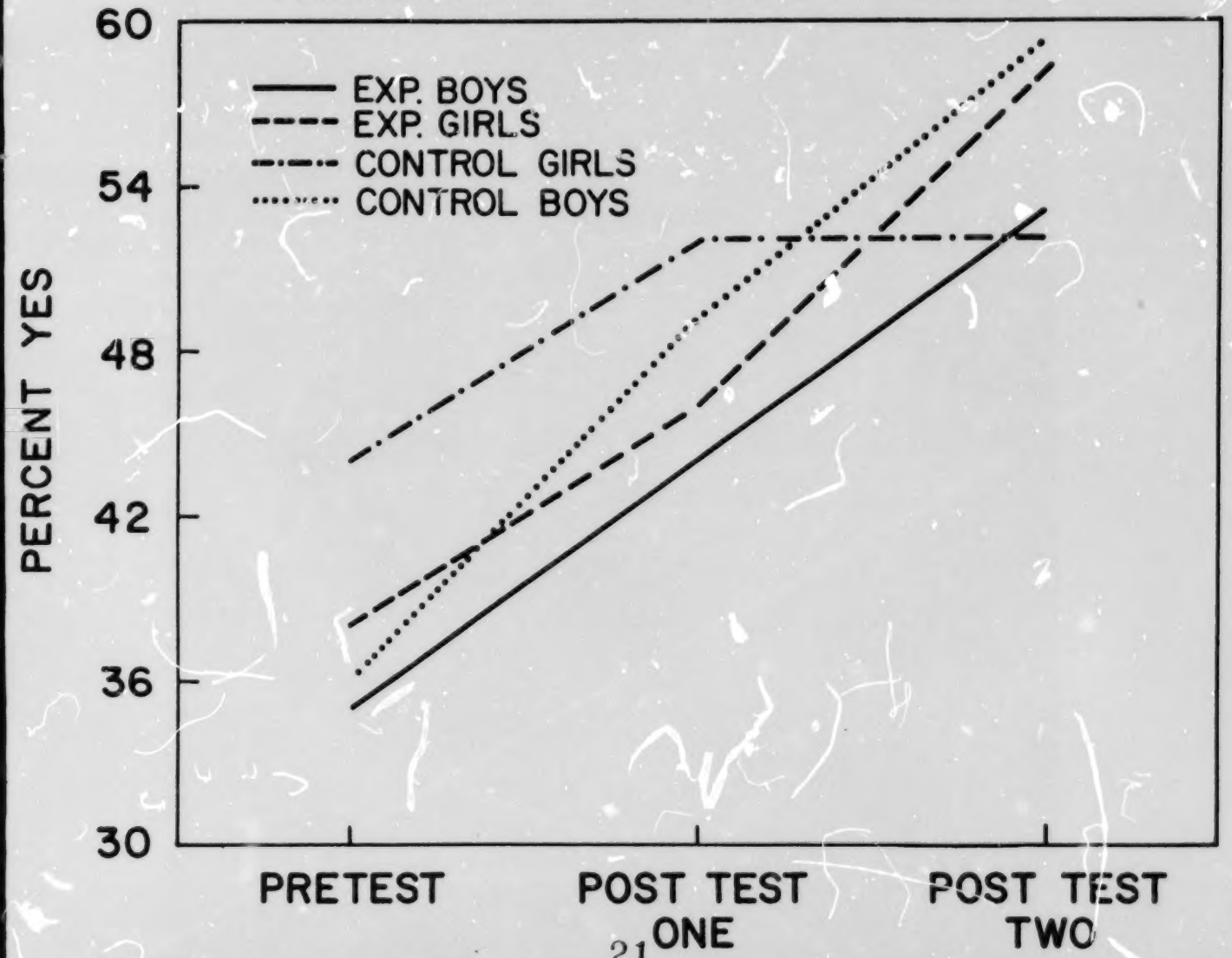

FIGURE 2

HAVE YOU SMOKED A CIGARETTE IN THE PAST MONTH?
TREATMENT BY SCHOOL BY OCCASION